Scandinavian Seas wind resource mapping using synthetic aperture radar

Hasager, Charlotte Bay; Christiansen, Merete Bruun; Nielsen, P.M.

Published in:
Geophysical Research Abstracts (CD-ROM)

Publication date:
2008

Document Version
Publisher's PDF, also known as Version of record

Geophysical Research Abstracts,
Vol. 10, EGU2008-A-01841, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-01841
EGU General Assembly 2008

Scandinavian Seas wind resource mapping using synthetic aperture radar

C.B. Hasager, M.B. Christiansen, M. Nielsen

Risø DTU, Wind Energy Department, Roskilde, Denmark (charlotte.hasager@risoe.dk)

The Scandinavian Seas have high potential for wind farming and a major part of existing offshore wind farms is located here. Each wind farm project has its own meteorological measurement campaign for the local area, yet for a broader view of the offshore wind resources additional information from satellite ocean wind observations and modelling is adequate. The present work presents estimates on offshore wind resources based on several hundred Envisat Advanced Synthetic Aperture Radar (ASAR) satellite images, kindly granted by the European Space Agency through the EO-1367 project. The images are downloaded, calibrated and calculated to wind maps in near-real-time using software developed by the Johns Hopkins University Applied Physics Laboratory. This operational tool obtains model wind directions from the Navy Operational Global Atmospheric System (NOGAPS) and retrieves wind speeds from the normalized radar cross-section using the CMOD5 model. The series of wind maps are input to S-WAsP, software for wind resource analysis based on satellite images. In S-WAsP the wind statistics in form of wind maps for mean wind speed, Weibull A and k and uncertainties are calculated. The results may also be extracted as wind statistics in table and as wind roses. Comparison to available data will be presented.